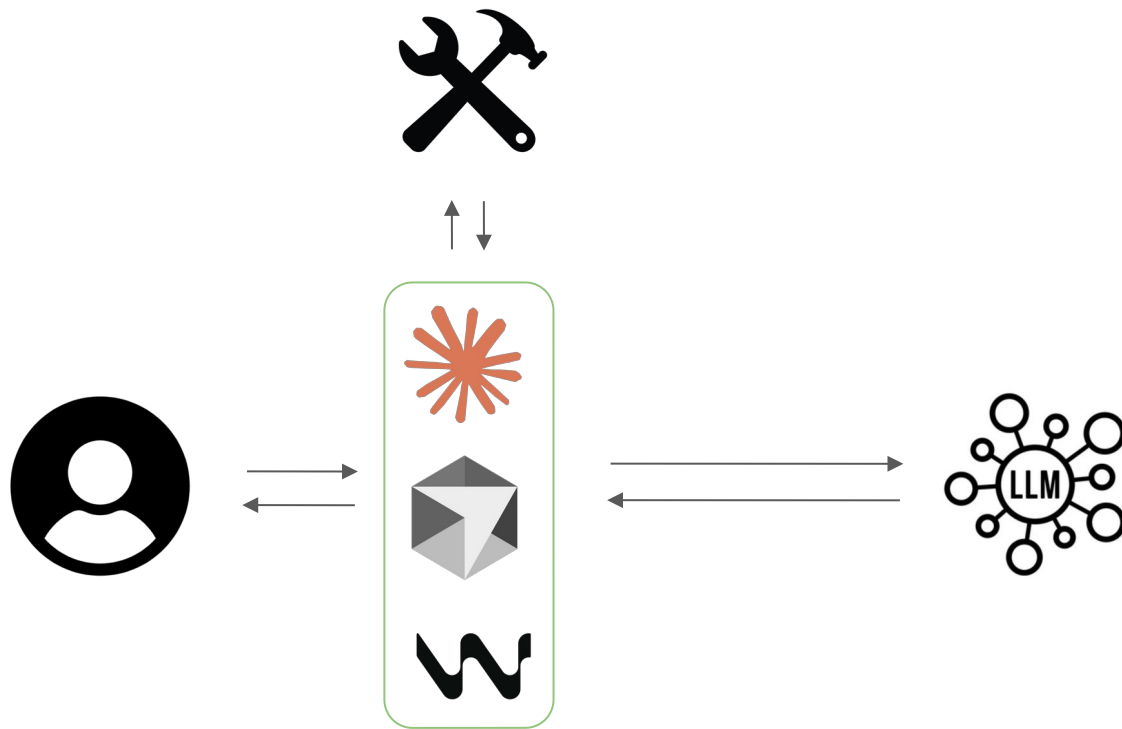


The Modern Software Developer

CS146S
Stanford University, Fall 2025
Mihail Eric

Building a Coding Agent From Scratch

It's that simple



Terminology

- System prompt
 - Define the behavior and some directives for the overall LLM
- User prompt
 - Custom user requests
- Assistant prompt
 - LLM's response

Steps

- Read in terminal and keep appending to conversation
- Tell LLM what tools are available
 - It asks for tool use at appropriate time
 - You execute tool offline and return response
 - “Read_file”
 - “List_dir”
 - “Edit_file”
- Create a new file, edit a new file

Let's build a coding agent from scratch!

The “Secret” Sauce

- Looking under the hood of Claude
 - Front-load context with tiny targeted prompts
 - System reminders everywhere including system/user prompts, tool calls, tool results to prevent drift (<system-reminder> tags)
 - Command prefix extraction
 - Spawns sub agents (likely to help with preventing context overloading)